

## A. E. M. M. A.

The American Railway Master Mechanics' Association meets this year at Baltimore, Maryland, May 13. The subjects to be reported on and discussed are:

1. Locomotive Boiler Construction.
2. The Operation and Management of Locomotive Boilers, including the Purification of Water.
3. The Comparative Value of Anthracite Coal, Bituminous Coal and Wood for Generating Steam in Locomotives.
4. The Construction, Operation and Cost of Maintaining Continuous Train Brakes.
5. The Relative Cost of Operating Roads of Gages of 3 feet 6 inches or less, and those of the ordinary 4 feet 8 inches Gage.
6. The Construction and Operation of Solid-end Connecting Rods for Locomotives.
7. Resistance of Trains on Straight and Curved Tracks, and on Wide and Narrow Gage Roads and with Four and Six Wheeled Trucks, and with Long and Short Wheel Bases.
8. The Efficiency of Check or Safety Chains on Engine, Tender and Car Trucks in Lessening the Danger Resulting from Running Off the Track.
9. The Machinery for Removing Snow from the Track.
10. The Machinery and Appliances for Supplying Fuel and Water to Locomotives.
11. The Machinery and Appliances for Removing Wrecks and Erecting Bridges.
12. The Best Form and Proportion of Axles for Cars and Locomotives, also whether there is anything to be gained by the use of Compound Axles and Loose Wheels.
13. Anti-Friction Valves and Valve Gearing.
14. Compression Brakes.
15. Steel Tires.

## Tidal Power Machine.

A practical trial recently took place in Brooklyn of Edward W. Morton's machine worked by the rise and fall of the tide, the power thus derived to be utilized for mechanical purposes. The contrivance was tried at the foot of South Tenth street, East River, before a large number of persons interested. The machine works by means of a "float," which, as it rises and falls with the waves or the tide, propels the machinery to which it may be attached. At the trial it was geared to a saw, and worked with the full rapidity of a circular saw run by steam power, although, perhaps, not quite so uniformly.

PROFESSOR HENNEBERG, in a recent sanitary report made at Cassel, makes some observations of a practical interest with regard to water consumption by animals. In the vital process, the water perspiration (by lungs and skin) is in proportion to the water consumption. With increasing perspiration, moreover, there is an increased formation of carbonic acid, and (therefore) consumption of carbon. Hence the more water is taken, the less carbon containing food is utilized for nutrition. Further, the more water drunk by an animal, the more albumen is discharged by the urine. It is, on these accounts, uneconomical and injurious to give animals large quantities of water with their food, or to allow them to perspire in hot stables, etc. Bipedes as well as horses will take notice.

By a new railway law in Massachusetts, all roads communicating with Boston are obliged to run early morning and evening trains for the benefit of workmen, at reduced rates. The working men's train on the Eastern Railroad now runs six cars instead of two, with which it began. The only law of this kind in New York State is the clause contained in the charter of the Broadway Underground Railway, New York city, which fixes a low fare between the hours of 5 and 7, morning and evening.

THE JAPANESE GOVERNMENT has founded a College of Engineers at Yeddo, in which natives of Japan are to be thoroughly instructed in technology and practical engineering. Professor Henry Dyer, formerly of the University of Glasgow, Scotland, has been appointed chief of the new institute. Several other prominent English professors are to assist him. Japan is making rapid strides in the acquisition of practical arts and knowledge.

THE postal cars are to be run directly into the basement of the new Post Office building in Boston. The new Post Office building in New York was also constructed, so far as the basement portion is concerned, with special reference to the running of the postal cars over the Broadway Underground Railway, directly into the Post Office. The building has a front of three hundred and forty feet on Broadway.

AT A CONVENTION in which twenty-seven trades' unions were represented, recently held in New York city, it was resolved to postpone the contemplated strike for eight hours until 1874.

A BILL is before the New York legislature to authorize the formation of a corps of sappers and miners, with power to blow up buildings during an extensive conflagration.

A. BIRNEY, of Jersey city, N. J., has patented a new mode of using coal dust as fuel. He blows it into the fire by air pressure, through perforations in the grate bars, which are hollow.

ON Church Island, which stands in the middle of Salt Lake, some veins of copper ore have been discovered. If silver could only be found, the salt now wasted on the desert air might be made useful.

## NEW BOOKS AND PUBLICATIONS.

DOWNING'S COTTAGE RESIDENCES. By A. J. Downing. New Edition. Edited by George Harney, Architect, etc. Illustrated by numerous Engravings. New York: John Wiley & Son, 15 Astor Place.

On another page of the present issue, the reader will find a selection of cottage designs taken from this excellent work, which may be considered as specimens of the numerous finely executed engravings which embellish its pages. Many of the structures represented have been erected in various parts of the country, so that the author draws from actual experience for the advice and information which he gives relative to their proper construction. Each design—there are twenty-eight in all—is accompanied by plans and such other figures as are necessary to exhibit the details of the work, together with general specifications and builder's estimates of cost. In addition to describing the dwelling itself, the author furnishes valuable hints for laying out and decorating the adjoining grounds, giving plans of paths, roads, beds, &c., lists of flowers, shrubs and trees suitable to different localities, and, occasionally, sketches of rustic arbors, furniture, vases, and other articles of rural ornamentation. The volume is one which we do not doubt will prove a convenient and reliable hand book to all owners of country property desirous of learning how to improve and beautify the same in the cheapest and yet most effective manner. It is handsomely bound, finely printed on heavy paper, and is issued generally in the usual excellent style of the well known publishing house from which it emanates.

PROTECTION AGAINST FIRE, AND THE BEST MEANS OF PUTTING OUT FIRES: with Practical Suggestions for the Security of Life and Property. By Joseph Bird. New York: Hurd & Houghton. Cambridge: The Riverside Press.

We have received advance sheets of this work, in which many little known and interesting facts about fires are collected. The book, when published, may be read with interest by the whole community; and the suggestions in it, if not very original, are practical and have been, for the most part, tested in actual conflagrations.

THE POETRY OF ARCHITECTURE: Cottage, Villa, etc. To which is added "Suggestions on Art." By Kata Phusin. With Numerous Illustrations. New York: John Wiley & Son, 15 Astor Place.

We have here an æsthetic treatise on the beauty and grace which may be, by skillful hands, given to the cheapest and lowliest forms of house building. The publishers attribute the authorship of the work to Mr. Ruskin; and the inimitable style in which it is written will justify the assertion. The originality of idea throughout the whole book shows that it is the production of a practical man and a practised writer.

COMPOUND METALLIC COLUMNS, OF EITHER WROUGHT OR CAST IRON, FOR BUILDING PURPOSES. Illustrated. By John A. Kay, Architect and Civil Engineer. St. Louis: H. R. Hildreth, Olive and Second Streets.

We published, on page 47 of our current volume, the system and design of Mr. Kay's improvements in iron building. The author has, in the publication now before us, given an elaborate description of his inventions, and has added tables and data by which architects can adapt them to buildings of all sizes and for all purposes.

## DECISIONS OF THE COURTS.

United States Circuit Court.—Southern District of New York.

PATENT FOR GLASS BUTTON.—ALBERT X. SMITH vs. WILLIAM W. MCFARLAN et al.—SAME vs. SAME. (In Equity.—Before Judge Benedict.)

These were two causes, in which all the parties are glass manufacturers. The complainant claims to be the inventor of a new article of manufacture in the shape of a glass button with a metallic back, of wire cloth or perforated metal, for giving strength to the button. Letters patent were granted to him for this invention, as well as for another, consisting of a die and press for stamping these buttons out of molten glass, January 28, 1873. He claims that one of the defendants was a workman in his employ, and that he, after acquiring all the necessary knowledge about these buttons and presses, left the complainant's factory, and with the other defendant set up a rival manufactory of their own, in which they use presses and make buttons which infringe the complainant's patents. The case came on, upon a motion for a preliminary injunction to restrain the defendants from using the presses and making the buttons which are claimed to infringe. The defense set up was that the grant of the complainant's patent was of too recent a date for him to have acquired the exclusive possession which the law requires, and that the defendants had made such changes, in the construction of their presses and buttons since the patents were issued, as to avoid the patented features. The proofs submitted by them established this state of facts to the satisfaction of the court, and the motion for an injunction in each case was denied. J. W. Fisher, for complainant. B. E. Valentine, for defendants.

Inventions Patented in England by Americans. (Compiled from the Commissioners of Patents' Journal.)

From April 14 to April 17, 1873, inclusive.

CLIPPING MACHINE.—J. W. Guernsey, Winchester, Mass.  
CUTTING SCREW THREADS.—P. Hickey, Auburn, N. Y.  
EQUILIBRIUM PISTON VALVE.—T. Critchlow (of Baldwin, Pa.), London, Eng.  
PUMPING MACHINERY.—E. Cope et al., Hamilton, Ohio.  
RAISING WEIGHTS, ETC.—T. A. Weston, Ridgewood, N. J.  
TELEGRAPH.—M. Gally, Rochester, N. Y.  
TRIMMING BOOT SOLES, ETC.—S. H. Hodges, Lynn, Mass., et al.

## Recent American and Foreign Patents.

## Improved Ant Trap.

Theodore G. Ames, Kosoc, Texas.—This invention relates to a new annual sheet metal pan arranged so that it can be used advantageously for the purpose of catching ants. In use this trap is placed upon the ground over and around an ant hill, and earth is piled around. Within the trap moist soil is by preference piled, the moisture being for the purpose of not choking the entrances into the ant hill. All ants that may attempt to reach the entrance to the hill may, or will, pass over the upper edge and drop into an annular chamber, and all those attempting to leave the hill will pass into the same chamber. On the smooth metallic inner faces of these plates ascent will be impossible to the ants, and they therefore will be securely caught and retained.

Improved Adjusting Attachment to Reversing Levers, etc. George W. Jordan, Passaic, N. J.—This invention consists of a worm wheel and turning gear to work it, and a toothed face on the quadrant bar for holding the lever of a reversing apparatus, throttle valve, and the like levers, so combined with the lever and the said holding bar that the lever can be shifted by the worm when it is desired to adjust it nicely, while at the same time the worm wheel, which also serves for the holding catch, can be disengaged by the ordinary catch lever, in the same manner that the ordinary catch is, when the principal lever is to be shifted to any considerable extent.

## Improved Collar.

Andrew Flatley, Brooklyn, N. Y.—This invention has for its object to improve the construction of linen and other collars to adapt them to receive an ornamental clasp. The invention consists in forming an obtuse salient angle on each of the inner sides of the lappets of a "Byron" collar, thus forming a triangular space above and below the same when the collar is adjusted for wear.

## Improved Ash Sifter.

Samuel Smith, Brooklyn, N. Y.—This inventor proposes to furnish to the public an ash sifter supplied with a mechanism by which the dust so annoying in sifting is entirely obviated, and at the same time the danger of fire incident to the present mode entirely avoided. In using this sifter the main vessel is uncovered, the sieve with the ashes to be sifted is placed on the lugs made within, the cover replaced, the hand lever inserted through a slot into the holes provided in the sieve and projecting band, then the sieve is thoroughly shaken till the pieces of coal and ashes are separated, when the hand lever is taken out, the vessel uncovered, the sieve with the unburned coal removed, and the main vessel with the ashes placed in readiness for carting off.

## Improved Fire Extinguisher.

John C. Meehan, Springfield, Mass.—The invention consists in the improvement of fire extinguishers. A pipe, connecting with the boiler of any kind in which steam is maintained, is arranged to extend around the room. A valve case is arranged with a cap, having several nozzles pointing in different directions, to deliver the steam escaping from the pipe in jets when the valve is open. The stem of the valve connects with a lever, which is caused to hold the valve shut by a stick placed under its free end, and resting on an adjustable seat. This stick is hollow, and filled with powder or other explosive material, with which a fuse connects, which is to be so extended about the room, and so disposed that it will be ignited quickly in case of fire in the room and explode the stick, so as to free the valve and allow the steam to open it and escape into the room. A bell cord is attached to an extension of the lever for transmitting an alarm to other rooms or frequented places.

## Improvement in Incasing Caustic Alkali.

George W. Humphrey, Pompey, assignor to himself and J. Munroe Taylor New York city.—This invention consists of an improvement in the mode of incasing caustic alkali (soda or potash) in hermetically sealed envelopes, so as to secure it most perfectly against atmospheric deterioration and deliquescence, which also renders its highly corrosive nature harmless. The inventor uses for this purpose india rubber cloth, cut into suitable sized pieces. When thus enveloped with india rubber the whole is wrapped with common Manila paper.

## Improved Churn Power.

William A. Lewis, Springfield, Vt.—The object of this invention is to improve the apparatus employed in rotating the dashers of churns, and consists, first, of a clutch by which two gear wheels are fastened so as to revolve together. It also consists in the mode of confining the wheels to the arbor. When it is desired to give the dasher a more rapid motion, the one wheel is detached from the arbor and placed upon a stud, which enables the two wheels to mesh together and increase the motion of the dasher.

## Improved Friction Clutch.

Samuel B. Alger, Oswego, N. Y.—This invention has for its object to furnish an improved friction clutch grasping the pulley promptly and firmly. The invention consists in certain combinations of parts, as hereinafter described. The loose pulley is kept in place upon the shaft by means of a collar and by the center piece of the clutch, which center piece is keyed with said shaft, and is made in the form of a disk of a less diameter than the pulley, and has a wide transverse groove formed across the middle part of its outer side. The side edges of the center piece are notched at the ends of its transverse groove to receive blocks, the ends of which are pivoted to the outer edges of the plates of expanding arms. The outer edges of the pivoted blocks are curved to correspond with the curve of the flange or of the pulley, and are, with the groove, formed in the inner surface. This construction gives a greater friction surface to the clutch, and enables it to grasp and hold the pulley more firmly. Double plates are arranged, the edges of which are slightly inclined to fit squarely against the inclined sides of the wedge keys, which are driven between said edges to enable the wear of the clutch to be conveniently taken up. The plates are so secured together that the arms may be readily contracted and expanded, as may be required. The expanding arms can be readily attached and detached.

## Improved Washing Machine.

Price C. Dillan, Villisca, Iowa.—This invention has for its object to furnish an improved machine for washing clothes quickly and thoroughly, and without injuring them, and the apparatus may be used as a receptacle for unwashed clothes and as a wash stand. The invention consists in the combination of a concave stationary rubbing surface, and a vibrating rubber of corresponding form, pivoted in slotted bars, which are provided with lateral arms or extensions, hinged to the side of the tub or box so that the rubber may move up and down to adjust itself to the thickness of the clothes. By suitable arrangements the rubber can be conveniently turned back for the ready insertion and removal of the clothes. The machine may be operated when desired by a person sitting at the end of the box, the cover of which may be turned back into a horizontal position to serve as a table to hold the clothes when being put into and removed from the machine.

## Improved Horse Power.

George M. Branch, Winona, assignor to W. A. Moore, Magnolia, Miss. This invention has for its object to furnish an improved horse power for driving cotton gins and other light machinery. To the middle part of the base of the frame of the machine is attached a step in which a pivot formed upon the lower end of a vertical shaft revolves. The upper end of the shaft is pivoted to the upper part of the frame. To the lower part of the vertical shaft is attached a sweep, to the end of which the power is applied. To the shaft and sweep is attached a large horizontal wheel which gears with another wheel attached to a horizontal shaft of which the bearings slide up and down in grooves in the inner sides of upright bars attached to the upper part of the frame. By adjusting wedges the said bearings may be adjusted as required. The teeth of the gear wheel also mesh into the teeth of another small gear wheel attached to a shaft to which is attached the band wheel from which the power is taken to the machinery to be driven. By this construction, the power, being applied to the large wheel, is applied at great advantage, so that more work may be done with a less expenditure of power than with machines constructed in the ordinary manner.

## Improvement in Extracting the Juices of Sugar Cane, etc.

George Wilkinson, Antoine L. Possoz, Jean P. Lafargue and Auguste E. Dutreth, Paris, France.—This invention is a process and apparatus for extracting juice from cane and other sugar-containing matter. The cane in the form of chips is fed continuously through vats provided with agitators which carry the chips back and forth. The liquid forming the extract is, by the arrangement, constantly becoming stronger, as the newly admitted liquid comes first into contact with the spent chips of cane or other material. The inventors claim: 1. The mode of extracting the saccharine matter of cane and other saccharine substances, by subjecting the same, when suitably prepared or divided, to the action of heated saccharine juice, followed by washing in a mixture of dilute juice and pure water, said operations being conducted in the apparatus specified. 2. The combination of two or more macerators, substantially such as described, into and through which the prepared cane or other saccharine substance is successively passed, as set forth, the liquids with which said substance is treated during its passage through said macerators being obtained and supplied to and discharged from said macerators. 3. An apparatus for extracting the juices of sugar cane and other saccharine vegetable substances, the parts of which are constructed, combined and arranged for operation.

## Improved Upright Piano Action.

George C. Manner, Mott Haven, N. Y.—This invention is an improvement in the class of pianoforte actions wherein what is known as the French action is adapted to upright pianos. The improvement consists mainly in the arrangement of hammer and rebound cushion with the main lever of the French action on which the key operates. The damper, which, in position of rest is held by a spring constantly against the cord, is supported on a lever by a sliding rod so that when said lever is swung up by the action of the key it will in the first place act upon the hammer, secondly, push the damper off the cord, and, thirdly, carry a cushion forward to receive the hammer when it drops back from the cord.

## Improved Machine for Cutting Hoops.

Augustus G. Parkhurst, Appleton, Wis.—This invention relates to a new improvement in machines for cutting beveled pieces or sheets from blocks of wood; and consists in the arrangement of the cutting knives in a sliding frame. The piece of wood to be cut is placed on a bed, against vertical ribs, and between adjustable pieces. Short knives are arranged which may be set to any required angle with a long knife. As the knives are brought down upon the piece of wood, the ends are cut to a bevel simultaneously, and then the sheet which is cut from the piece by the long knife will be evenly beveled at each end, so that they may be lapped on each other and fastened when formed into boxes or cylinders for various purposes.

## Improvement in Dental Gold.

R. S. Williams, New York city.—In this invention, two or more sheets of plain foil with an outer sheet of frosted gold are rolled into a cylinder over a mandrel, and the lapping edge of foil caused to adhere by passing it over the flame of an alcohol lamp. The frosted gold, by its greater stiffness, will prevent the several folds forming the coil from adhering.